

International **IOR** Rectifier

PRELIMINARY

IRPT5051A

POWIRTRAIN™

Integrated Power Stage for 15 hp Motor Drives

- 15 hp (11 kW) power output
- 380 - 480V AC; 50/60Hz
- 3-phase rectifier bridge
- 3-phase short circuit rated ultrafast IGBT inverter
- HEXFRED™ UltraFast™ soft recovery
- free-wheeling diode
- NTC temperature sensor
- Pin-to-base plate isolation 2500V rms
- Easy-to-mount package
- Case temperature range -25°C to 125°C operational

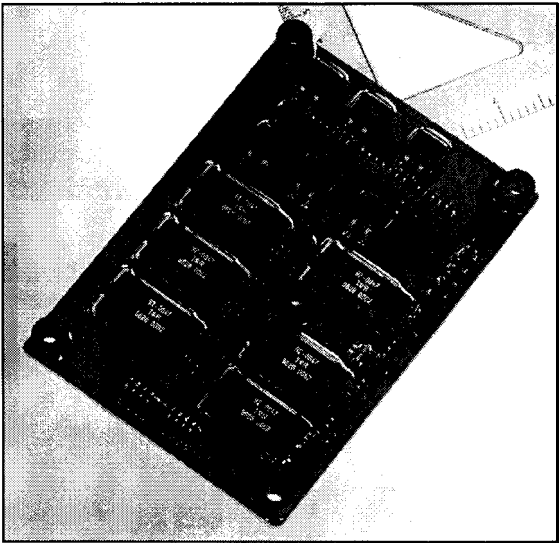


Figure 1. IRPT5051A Power Assembly

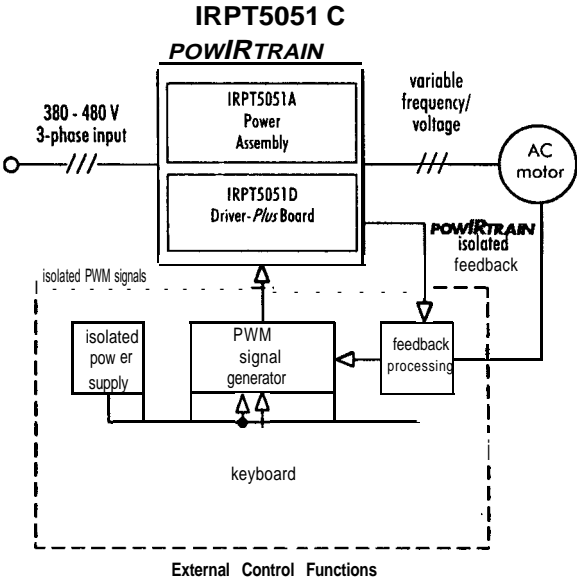


Figure 2. The Power Assembly and **POWIRTRAIN** within a motor control system

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Description

The IRPT5051 A Power Assembly

The IRPT50 51A power assembly (figure 1) consists of input rectifiers, an NTC thermistor, an output inverter and connectors, all mounted on an Insulated Metal Substrate (IMS). The input side employs 1600V SMD-220 rectifier diodes, while the inverter section employs SMD-10 surface-mount 1200V short-circuit-rated IGBT co-pack switches. The NTC thermistor mounted near the inverter provides temperature sensing capability. The lead spacing on the power assembly meet UL840 pollution level 2 requirements.

The power circuit and layout are carefully designed to minimize inductance on the power path, to reduce noise during inverter operation and to improve inverter efficiency. The driver board required to run the inverter can be interfaced to the power assembly through solder pins thus minimizing assembly and alignment effort. The power assembly is designed to be mounted to a heat sink with five screw mount positions (one in each corner and a fifth near the center) in order to insure good thermal contact between the IMS and the heat sink.

POWIRTRAIN and Design Kit

The IRPT5051C (figure 3) provides the complete power conversion function for a 15hp (11kW) variable voltage, variable frequency AC motor controller. The **POWIRTRAIN** combines the Power Assembly (IRPT5051A) with a Driver-Plus Board (IRPT5051D) as shown in the block diagram, figure 2. The Design Kit includes the following:

- complete **POWIRTRAIN** integrated power stage
- specifications and operating instructions
- bill of materials
- electrical schematic
- mechanical layouts
- software transferrable file for easy design integration
- application information and layout considerations

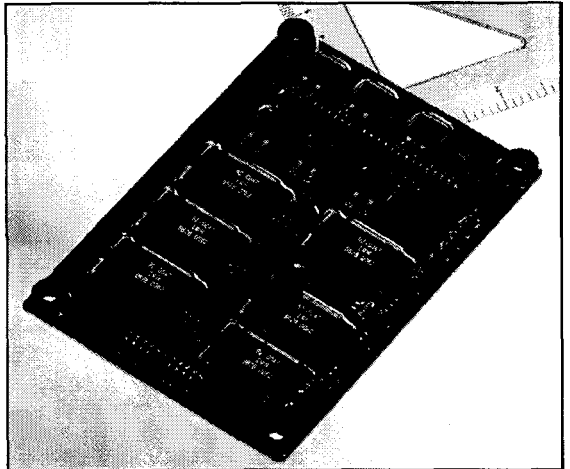


Figure 3. IRPT5051C